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Editorial

Feeding the Planet and Greening Agriculture: Challenges and opportunities for the bio-economy

The 2007/08 commodities crisis and repercussions in the following years have shown the vulnerability of the global food economy to shocks coming from extreme weather events, financial or energy market disruptions. The repeated food shortages, exacerbated by agricultural policies aimed at reducing the domestic impacts of the world food crisis, raised concerns about the potential devastating impacts of a new era of global food scarcity on the world's poor and on the world's natural resource equilibrium. The estimated significant increases of the people to be fed in the next thirty years and the expected nutritional improvements for a relevant share of the world population will imply a very substantial rise in the demand for agricultural production. To meet the increased food demand resulting from population and income growth, agricultural production will need to be 60% higher in 2050 than in 2006 (FAO, 2014). Because there is little scope for expanding agricultural land, except for some regions in Africa and South America, demand for agricultural land and water is expected in the next years to grow. In the past decades, agriculture has satisfied increases in food demand by means of productivity improvements. Increasing agricultural productivity growth is considered as a key factor for the improvement of food security in the next decades (Baldos and Hertel, 2014). However, recent evidence about a decreasing trend in yield growth of major crops increases concerns about the ability of agriculture to feed world population (FAO, 2014). Climate change and the reduction of water availability are likely to sharply affect productivity in agriculture and forestry, especially in regions where malnutrition is most prevalent. On the other hand, agriculture and forestry are key target sectors of climate change mitigation policies, in that their contribution to the reduction of greenhouse gas emissions could be substantial.

In this rapidly evolving scenario, the EU reformed its policies with the objective of developing a sustainable bio-economy, that is, an economy that satisfies the increase in food and energy needs, while ensuring the sustainable use of biological resources, biodiversity and environmental protection. Agriculture plays a key role in the "greening" of the whole economy. Recent reforms of the Common Agricultural Policy include greening measures, such as the introduction of greening rules farmers must follow to get a part of the CAP payments.

The challenges and opportunities for the bio-economy and the new policy demand in this new scenario were the overall topic of the Third AIEAA Conference held in Alghero (Italy) 25-27 June 2014. The Conference included more than 80 papers addressing a range of research and policy issues such as: food and nutrition security issues in specific areas; the modeling and measurement of climate change impacts on bio-based productions; risk management strategies for climate change; innovations in the bio-technology industry and implications for the bio-based supply chain; cost of the policies aimed at mitigating

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the effects of climate change on the bio-economy. The BAE Editor invited the speakers of the AIEAA Conference to submit their papers for this BAE special issue. Four papers published on this issue were selected after regular peer review from those presented during the Third AIEAA Conference; they represent only an essay of the topics covered by the Conference. In particular, the paper by Justus Wesseler deals with the introduction of new biotechnologies in the agri-food industry, namely the genetically modified engineered crops, and analyzes the responses of the food producers, food processors, food retailers and consumers industry. Davide Marino and co-authors address the issue of the assessment of the costs and benefits of Natura 2000, the European network of protected areas aimed at the protection of biodiversity, by analyzing two Italian case studies. The paper by Joseph Cooper and Benoit Delbecq deals with the new US income entitlement programs for agribusinesses, referred to as "shallow loss", introduced by the US 2014 Farm Bill: more specifically, they propose an approach to assess the sensitivity of the farmers downside risk protection to marginal changes in the deductible of shallow loss program scenarios. Finally, the paper by Pisani and Burighel uses a social network analysis approach to assess the transnational cooperation projects promoted by the Local Action Groups in a specific Italian region.

Baldos, U.L.C., Hertel, T.W. (2014). Global Food Security in 2050: the role of agricultural productivity and climate change. *The Australian Journal of Agricultural and Resource Economics* 58: 554-570.

FAO (2014). The State of Food and Agriculture 2014, FAO, Rome, 2014.

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